Production of Compact Powder Blush On using Secang Wood Extract (*Caesalpinia sappan* L.)

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**ABSTRACT**

Secang wood (*Caesalpinia sappan* L.) is one of the local resources that contain natural pigments, namely brazilin. Brazilin is a pigment derived from Secang wood (*Caesalpinia sappan* L.) that is potentially used as a natural dye. This study aims to prove that Secang Wood (*Caesalpinia sappan* L.) can be applied as a dye from Compact Powder Blush On and see its stability color of product. The method for obtaining Secang wood (*Caesalpinia sappan* L.) extract uses the maceration extraction method with a sample of Secang wood (*Caesalpinia sappan* L.) of 250 gram and ethanol 96% then evaporated in a water bath with a temperature below 80 °C. The thick extract of Secang wood (*Caesalpinia sappan* L.) is 27.87%. pH during the maceration process must be kept neutral. Addition of citric acid or sodium bicarbonate is done when the pH unstable. Raw material of manufacture the Compact Powder Blush On is Talcum, Kaolin, Parrafin Liquid, Okside Zinc, and Isopropyl myristate. The Secang wood extract (*Caesalpinia sappan* L.) concentration is 5%, 10%, and 20%. Tests on physical compact powder blush on are pH test, sticky power test, topical test, and stability color of compact powder blush on. The observations show that the Compact Powder Blush On product at a concentration of Secang wood extract (*Caesalpinia sappan* L.) of 5%, 10%, and 20% is easily applied, has an average adhesion of 13.83%, produces a pink color when application, and has a pH of 7. However, the usage of Secang wood (*Caesalpinia sappan* L.) as a Blush On dye does not have color stability. Based on the results of the study it can be concluded that Secang Wood (*Caesalpinia sappan* L.) can be used as a natural dye Compact Powder Blush On, but the addition of other ingredient is needed so that the color remains stable during storage at room temperature.

**Keywords:** Brazilian; components of the Compact Powder Blush On; natural dye; Secang wood (*Caesalpinia sappan* L.) extract

**INTRODUCTION**

The Indonesian state has abundant natural resources to be used and useful for human life, one example of which is benefits from secang wood. Secang wood is a plant that has long been used as a traditional medicine. The components of bioactive compounds contained in secang wood such as brazilin, brazilein, 3'-O-methylbrazilin, sappanone, chalcone, sappanocalchone and other common components such as amino acids, carbohydrates and palmitic acids are relatively very small (Rina, 2013).

The presence of the Brazilian component gives specifics from secang wood, which is brownish red if oxidized or in an alkaline atmosphere. However, it is Brazilian which is thought to have the effect of protecting the body from poisoning due to chemical radicals. Secang wood which has colored pigments caused by the presence of brazilin compounds gives coloring from old orange to thick red. In the application of the use of secang wood as traditional medicine in some regions, it is more familiar with secang wood with pink color (Rina, 2013). Based on its antioxidant activity, Brazilin has the effect of protecting the body from chemical radical poisoning (Zhong *et al*., 2009). Furthermore Rusdi *et al.* (2005) stated that secang wood extract has the best antioxidant ability compared to vitamin C and vitamin E, and is able to increase the value of the Total Antioxidant Unit in the body. Flavonoids contained in wood extract have a number of abilities to reduce or inhibit the formation of hydroxyl free radicals, superoxide anions, peroxyl radicals, alkoxyl radicals, singlet oxygen, and hydrogen peroxide (Rahmawati, 2011).

In the field of cosmetic formulations, dyes which are mixed into the manufacture of cosmetics are dyes from chemicals and natural dyes. Dyes are substances or mixtures of substances which can be used in cosmetic preparations to color preparations.
Substances of natural dyes are dyes that come from nature such as animals, minerals and plants both directly (Adliani et al., 2012). The chemical elements contained in beauty products are very dangerous for skin health. The danger posed is very diverse such as zits, black spots and many more skin diseases caused by the chemical content of cosmetics on the market. Based on the results of laboratory investigations and testing by the Indonesian Food and Drug Administration (BPOM RI) in 2007, circulating cosmetics found 27 cosmetic brands containing dangerous ingredients and were prohibited from being used in cosmetics as dyes such as Rhodamin B (red K. 10 and red K. 3) (BPOM RI, 2007). Public health about the dangers of chemical-based cosmetic products makes them tend to choose products derived from natural ingredients that are safer for the skin. Natural ingredients can be natural dyes from natural, natural ingredients or natural dyes for blush on that are safe and have benefits that are in accordance with their use.

Blush on is a cosmetic preparation that is used to color the cheeks with an artistic touch so that it can enhance the fresh impression in makeup. Blush on is used with the aim to correct the face so that the face looks prettier, fresher and more dimensional (Kustanti, et al., 2008). blush on has several forms including liquid, cream, solid/cake and powder (Astati, 1996). blush on is available in a variety of colors namely red, orange, pink and brownish (Kustanti, et al., 2008). blush on is created from attractive colors and of course using dyes. It's just a negative influence on the skin of the face, especially the cheeks, which begins with itching and then flushing and even flaking skin (Rostamailis, 2005). blush on itself, its function is to provide a tapered accent and more fresh on the face. Highlight the cheekbones, so that they can correct the face so it's not too rounded. On the other hand, those with too thin faces, blush on can also disguise and give volume to the cheeks.

From the explanation that has been explained about Brazilin in secang wood and cosmetics, the researchers are interested in making the extract of secang wood as a natural dye in the formulation of compact powder preparations blush on.

**METHODS**

**Equipments**
Blades, blenders, sieves, porcelain cups, measuring cups, digital scales, pipettes, spoons, stirring rods, funnels, thermometers, filter paper, a set of maceration tools for extraction, universal pH, mortars, pestles, ovens, and places for compact blush products on.

**Materials**
The main ingredient is Secang Wood (Caesalpinia sappan L.). Other ingredients: talcum, kaolin, zinc oxide, paraffin liquid, isopropyl myristate and ethanol 96%. The overall formulation of compact powder blush on from secang wood extract (Caesalpinia sappan L.) can be seen in Table I.

According to Table I, the concentration of Secang wood extract (Caesalpinia sappan L.) is 5% (F1), 10% (F2) and 20% (F3). Other components, such as talcum (38%), kaolin (20%), paraffin liquid (10%), zinc oxide (22%), and isopropyl myristate (10%) is used to make compact powder blush on.

**Procedures**

**Extraction of brazilin**
The simplicia of secang wood is mashed and then extracted by maceration by dissolving as much as 250 grams of secang wood powder, then adding 96% ethanol as much as 500 ml or until the simplicia powder is completely

Table I. Formulation of Compact Powder Blush On

<table>
<thead>
<tr>
<th>Substances</th>
<th>Amount in Percent (%)</th>
<th>Formulation 1</th>
<th>Formulation 2</th>
<th>Formulation 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secang wood extract</td>
<td>5%</td>
<td>10%</td>
<td>20%</td>
<td></td>
</tr>
<tr>
<td>Talcum</td>
<td>38%</td>
<td>38%</td>
<td>38%</td>
<td></td>
</tr>
<tr>
<td>Kaolin</td>
<td>20%</td>
<td>20%</td>
<td>20%</td>
<td></td>
</tr>
<tr>
<td>Paraffin Liquid</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Zinc Oxide</td>
<td>22%</td>
<td>22%</td>
<td>22%</td>
<td></td>
</tr>
<tr>
<td>Isopropyl myristate</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
<td></td>
</tr>
</tbody>
</table>
Production of Compact Powder Blush On using Secang Wood Extract

Submerged. Simplicia powder must be completely submerged in 96% ethanol. Then, check the pH whether it is neutral, if not add a little citric acid or sodium bicarbonate to neutral pH. Every day stirring is carried out, filtering with new cloth and solvent is replaced to obtain the perfect filtrate. After approximately 48 hours in room temperature and avoid sunlight, all the filtrate obtained is concentrated above the waterbath (Putri et al., 2018). Concentration of secang wood extract was carried out at a temperature of 80°C (Rina, 2013).

The process of making compact powder blush on
First prepare ingredients which include thick extract of secang wood, talcum, kaolin, paraffin liquid, zinc oxide, isopropyl myristate.

Before the formulation is carried out, each additional material is sieved with no. 100. Second, ingredients other than the thick extract of secang wood and isopropyl myristate are mixed and crushed to a small and soft particle size. After softening, the thick extract of secang wood and isopropyl myristate is added to the mixture of ingredients little by little. Then, compact powder products that have been prepared are placed in containers. Compact powder blush on is tested.

Test of Compact Powder Blush On
Physical quality testing of preparations compact powder blush on includes pH test, sticky power test, and stability color of compact powder blush on.

RESULTS AND DISCUSSION

Determination

Plant determination was carried out at the Plant Taxonomy Laboratory of the Faculty of Biology, Jendral Soedirman University, Purwokerto. Based on the results of the determination of the secang wood plant (Caesalpinia sappan L.), it was obtained certainty that the plants that were determined and used for this study were truly tribes of the Leguminosae family and species of Caesalpinia sappan L.

Extraction of brazilin

The final extraction results with maceration obtained by thick reddish brown extract and distinctive smell. From 1500 ml of liquid extract obtained 69.68 gram thick extract and yield of 27.87%. This is because when evaporating the extract does not get too thick and refers to the research journal about the Formulation of Cheek Blush Preparations from Rossela Petal Extract (Hibiscus sabdariffa Linn.) As dyes in the form of compact powder, the yield is 25.17% (Bindharawati et al. 2015). On the other hand, research on secang wood by Fardhyanti and Riski (2015) with the title Brazilin collection from Secang Wood (Caesalpinia sappan L) with the maceration method and its application for fabric color mentioned that the viscous extract obtained was 6.316%. The secang wood extract standard itself is not stated in the Indonesian Herbal Pharmacopoeia, therefore it is assumed to be no less than 10% (MOH, 2008). Based on several explanations, it can be concluded that the yield obtained in this study still contains a lot of solvents.

Test of Compact Powder Blush On

pH test

Determination of pH Compact Powder Blush On is using universal pH paper. Water is added to the preparation until homogeneity later measured pH of the preparation. pH measurement done by dipping pH paper into the homogeneity solution (Ismail et al., 2014). The results of pH testing can be seen in Table II.

The pH results from compact powder blush on in formulations 1, 2, and 3 have a pH of 7. While the pH of the extract obtained was 6. The three pH formulations are produced in accordance with the pH for Brazilin, because the color of Brazilin has red color at neutral pH (6-7), shifts to wards purplish red at higher...
pH (8) and yellow at lower pH (2-5) (Adawiyah and Indriati, 2003). However, according to Walters (2002) the pH requirements of the cheek-blushing preparation that are good in accordance with the skin pH in general are from 4.0 to 5.5. On the other hand, Wasitaatmadja (1997) states that pH of skin in general are 4.5-7.0. Based on both references, it can be assumed that the pH produced by compact powder blush on is appropriate.

Sticky Power Test of Compact Powder Blush On

The sticky power test was conducted to determine how well Blush On is attached to the skin. Weighing 100 mg of blush on, then applied to the surface of the skin with an area of 100 cm². The location of the skin that is applied is blown with a blower that made of rubber, the powder that falls from the surface of the skin is accommodated in the paper parchment, then weighed powder that falls from the sticky location. Calculate the percentage of falling powder (Voight, 1994).

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\text{Percentage of falling} = \frac{\text{powder falling}}{\text{powder weight}} \times 100\%
\]

The results of sticky power test of the compact powder blush on can be seen in Table III.

<table>
<thead>
<tr>
<th>Formulation</th>
<th>Powder weight (g)</th>
<th>Powder falling (g)</th>
<th>Percentage of falling (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1</td>
<td>0,1</td>
<td>0,0143</td>
<td>14,3</td>
</tr>
<tr>
<td>F2</td>
<td>0,1</td>
<td>0,0129</td>
<td>12,9</td>
</tr>
<tr>
<td>F3</td>
<td>0,1</td>
<td>0,0117</td>
<td>11,7</td>
</tr>
<tr>
<td>Average</td>
<td>0,1</td>
<td>0,0130</td>
<td>12.97</td>
</tr>
</tbody>
</table>

Stability Color of Compact Powder Blush On Products

According to theory, stability is defined as the ability of a medicinal or cosmetic product to stay within the specifications set throughout the period of storage and use to guarantee the identity, strength, quality and purity of the product. A stable cosmetic preparation is a preparation that is still within acceptable limits during the period of storage and use, where the properties and characteristics are the same as those they have when made. This stability test is carried out by observing the physical changes of cosmetics made (Djajadisastra, 2004).

In formulations 1, 2 and 3 there are color changes from pink to brownish red after 5 days of storage in room temperature. This is because the oxidation of hydroxyl groups from Brazilin into carbonyl groups due to exposure to air and light can cause Brazilin to change color to brownish red (Farhana et al., 2015). The results of the compact powder blush on stability test can be seen in Figure 1.

CONCLUSION

Based on the results of research and discussion, it can be concluded that secang wood (Caesalpinia sappan L.) can be used as a dye in the manufacture of Compact Powder Blush On preparations but other ingredients must be added that can keep the color stable during storage. The physical test of the compact powder blush preparation carried out resulted as follows: In formulations 1, 2, and 3 with the addition of 5%, 10%, and 20% extracts of secang wood (Caesalpinia sappan L.) to produce pink. Using extract of Secang wood produced only sticks at 87.03%. The use of kaolin on compact powder blush on affects adhesion to the skin. Kaolin is a chemical that is useful for attaching cosmetics to the face, because hygroscopic kaolin is used in cosmetics generally does not exceed 25% (Nurhayati, 2016). In this study only 20% of kaolin was used.
The pH test in formulations 1, 2, and 3 has a pH of 7 in accordance with the pH of the skin in general, and is in accordance with the pH of Brazil’s stability to produce a pink color. In the sticky power test, all formulas have almost the same falling percentage. In the stability test, after storage for 5 days in room temperature (blush) the color changes from pink to brownish red because the oxidation of the hydroxyl group from Brazilin into carbonyl groups due to exposure to air and light which can cause Brazilin to change color to brownish red.

REFERENCES


